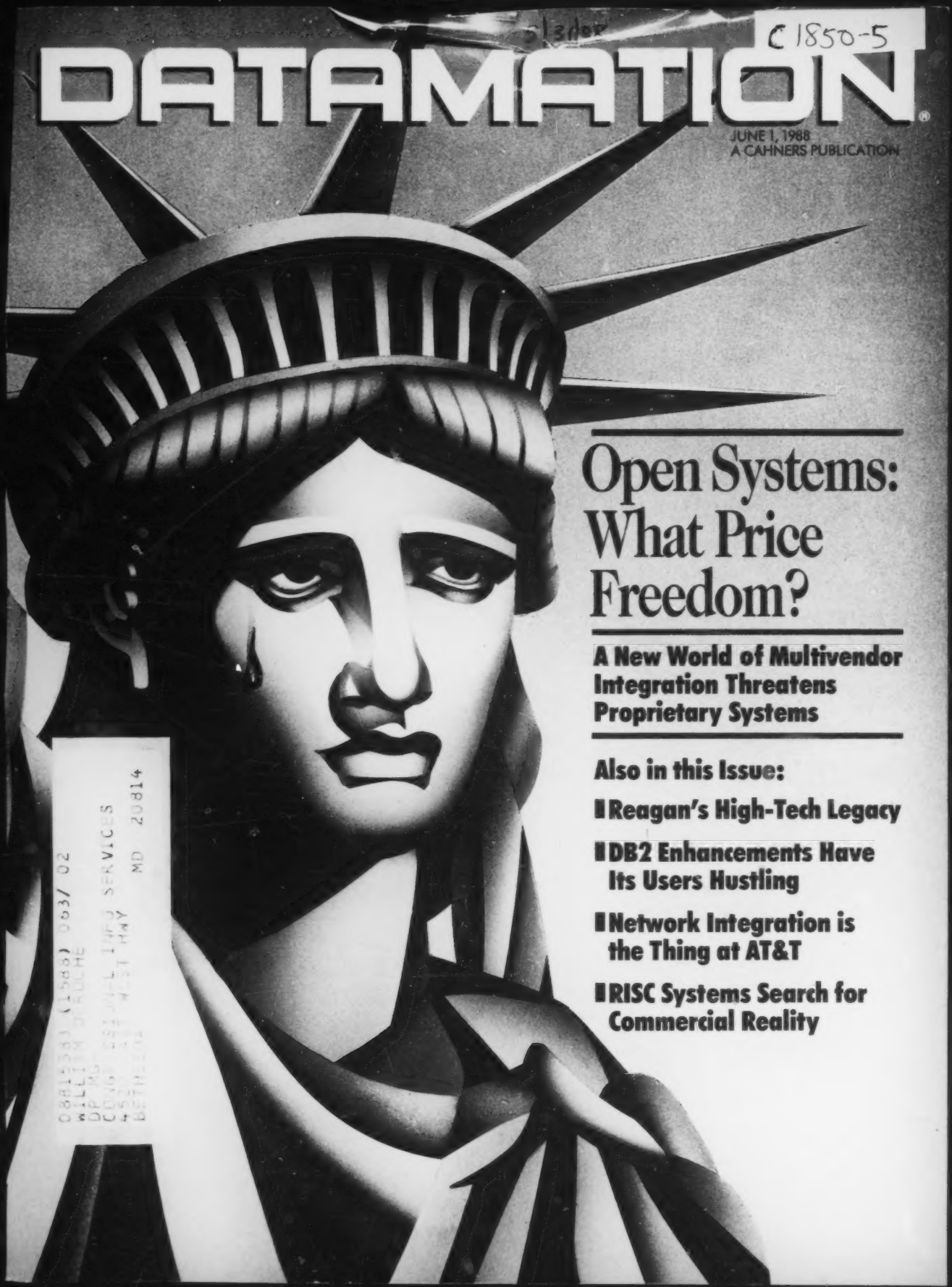
C1850-5

DATAMATION®

JUNE 1, 1988
A CAHNERS PUBLICATION



Open Systems: What Price Freedom?

A New World of Multivendor Integration Threatens Proprietary Systems

Also in this Issue:

- **Reagan's High-Tech Legacy**
- **DB2 Enhancements Have Its Users Hustling**
- **Network Integration is the Thing at AT&T**
- **RISC Systems Search for Commercial Reality**

DATAMATION

NEWS

9 **Look Ahead**
Allied Stores Corp. cancels its $30 million IS centralization effort.

19 **Standards**
Willie Schatz reports on MAP version 3.0. For users, this final overhaul to the specification promises to protect existing investments, but, for now, vendor commitments outnumber products.

21 **Management**
Is there life after Vittorio Cassoni for AT&T's Data Systems Group? Susan Kerr writes that Cassoni's successor, Robert Kavner, will emphasize user concerns in AT&T's strategy, but some IS execs are skeptical.

24 **32-Bit Systems**
RISC has been knee-deep in hoopla lately, as several vendors have issued statements of support. Gary McWilliams probes its potential commercial impact.

26 **DBMS Software**
Karen Gullo finds that, for many users, the road to DB2 V.2 is long and winding. They can't get to V.2 without migrating to release 1.3, which they can't do without CICS 1.7. Many aren't prepared to move to either, even though 1.2 support is due to end soon.

41 **Behind the News**
The Reagan Administration will soon be history, but it hopes its past will be the prelude to the efficient use of information technology by the feds for years to come. Willie Schatz explores its productivity moves, as well as its legacy in data security.

FEATURES

54 **Open Systems: What Price Freedom?**
BY RALPH EMMETT CARLYLE
Half of the hardware sold in the U.S. in 1991 is likely to run Unix, DOS, or OS/2—the operating systems that mean liberty from proprietary technology, and which portend increases in IS investment. Open systems may encourage "mega-corporations," while IBM users face a more constricted definition of freedom.
With:

57 *Searching for a Definition of "Openness"*
Are these systems "open" or "less proprietary"?

60 *The Goals of X/Open*
Its quest is for global support on standards.

62 **For AT&T, the Network's the Thing**
BY SUSAN KERR
Corporate America is having a networking party, and AT&T would like to be guest of honor. Some big firms have selected AT&T to integrate their voice and data networks, despite the governmental scrutiny that dealing with Ma Bell invites. Can AT&T, which, as part of its strategy, has become a champion of international standards, set the standard as a network integrator?
With:

64 *How Ford Motor Co. Assembled a Network*
A study of how the automaker chose an integrator.

82 **The DATAMATION/Price Waterhouse Survey**
This second quarterly survey comparing international IS trends confirms the decision to increase spending reported in March.

ION

NEW PRODUCTS

69 **Hardware**
New DEC VAX 6200s feature modular upgrade capability.

72 **Software**
Hewlett-Packard introduces five MAP 3.0 products.

DEPARTMENTS

4 **Letters**

76 **People**
David Methvin rebounds from corporate adversity.

78 **Readers' Forum**
Bob Forest dials up the wonderful world of voice mail.

78 **Calendar**
Attendees get personal at PC Expo in New York this month.

86 **Career Opportunities**

96 **Advertisers' Index**

96 **The Marketplace**

INTERNATIONAL 52-1

Does not appear in all copies.

-1 **The Genesis of a Soviet Software Industry**
BY DAVID HEBDITCH
Reforms may create an independent, Soviet software and services sector.

-9 **The Australian Productivity Challenge**
BY NORMAN KEMP
When it comes to IS productivity, Australia is no fatal shore. Governmental IS departments exhibit some of their innovations this month.

Cover illustration by John Jinks

Coming in the next issue:
The DATAMATION 100
Profiles of the 100 Biggest IS Companies
Financial Data on the 100 Biggest U.S. IS Vendors and the 50 Biggest European and Japanese IS Vendors
Analysis of Economic and Technology Trends in IS

INTERNATIONAL EDITION

JUNE 1, 1988
VOLUME 34
NUMBER 11
THIS ISSUE, 185,219 COPIES

1988 JESSE H. NEAL AWARD

1987 JESSE H. NEAL AWARD

Editorial

Amicus Emptoris Re: Look and Feel

The squabble among software and computer companies over copyright turf might seem to be of little concern outside the industry or the courts. But in fact it concerns users directly. Apple Computer Inc.'s lawsuit against Microsoft Corp. and Hewlett-Packard Co. over the look and feel of their respective Windows version 2.03 and New Wave offerings threatens to slow the pace of productivity improvements set by users as they incorporate each new generation of technology into their organizational systems strategies.

The threat comes not so much from the possible outcome of the litigation as from the confusion it creates in an already jittery user community. Organizations that are still shaking in their boots from last fall's stock market crash, still bewildered by their businesses' sluggishness despite robust capital spending, and still dumbfounded by the abundance of new information systems products flooding the market do not need yet another reason to postpone investments in micro software. What they require, instead, is the chance to evaluate the performance of new products—without any legal strings attached. If it isn't clear that they are going to get such a chance, then third-party software developers—the real partners in productivity these days—aren't going to design packages built on new generation software architectures.

That's especially true in the case of OS/2, the operating system that Microsoft has developed for 286- and 386-based workstations; the OS/2's multitasking capabilities hold the promise of significant improvements in end-user computing. A vital component of OS/2 version 1.1, scheduled to ship later this year, is Presentation Manager—a graphics presentation environment that will make pcs running OS/2 nearly as easy to use as Apple's Macintosh systems. Although Apple's court action does not specifically mention Presentation Manager, lawyers and analysts interpret some of the lawsuit's language regarding "derivative works" as including it.

Apple has every right to protect its intellectual property—even in court. That's not the argument here. Rather, it is that users have rights, too. They have the right to the best products available. To ensure such availability, we suggest they exercise their right of free speech. Call the legal counsels at Apple, Microsoft, and HP. Encourage them to settle their dispute immediately.

Tim Mead

TIM MEAD
EDITOR-IN-CHIEF

DATAMATION

Editor-in-Chief Tim Mead
Senior Editor Linda Runyan

Managing Editor/News & Features David R. Brousell
Senior Writer Ralph E. Carlyle
Deputy News Editor Theresa Barry
Deputy Features Editor Marsha J. Fisher
New Products Editor Mary Kathleen Flynn
Editorial Assistant Karen J. Scher
Editorial Secretary Anne M. Mangieri

Managing Editor/Production & Special Projects Parker Hodges
Copy Chief Steven Korn
Production Editor Hernalee Walker
Copy Editors René Matthews, John Quain
Production Assistant Suzanne P. Jones

International Editor Paul Tate
Tokyo Bureau Manager Robert Poe
Editorial Assistant (London) Lauren Murphy
Correspondents J. Etheridge, Paris; J. Martin, Milan

U.S. Bureau Managers
Boston Gary McWilliams
Dallas Robert Francis
Los Angeles Tom McCusker
New York Karen Gullo
San Francisco Jeff Moad
San Jose Susan Kerr
Washington Willie Schatz

Art Director Robert L. Lascaro
Associate Art Director Anne Cooney
Assistant Art Director Carolee Young

Contributing Editors J. Kelly, F. Lamond, H. Wiener
Advisory Board Joseph Ferreira, John Imlay, Angeline Pantages, Russell Pipe, Carl Reynolds, F.G. Withington

Publishing Director Donald Fagan
Associate Publisher William Segallis
Promotion Manager Stacy Aaron
Production Manager Eric Jorgensen
Research Manager Laraine Donisi
Director of Production Robert Elder
Director of Art Department Barrie Stern
Circulation Manager Cheryl Barnett

EDITORIAL OFFICES
Headquarters: 249 W. 17 St., New York, NY 10011, (212) 645-0067; telex 127703; fax (212) 242-6987. **New England:** 199 Wells Ave., Newton, MA 02159, (617) 964-3730; **Washington, D.C.:** 4451 Albemarle St. NW, Washington, DC 20016, (202) 966-7100; **Central:** 9330 LBJ Freeway, Suite 1060, Dallas, TX 75243, (214) 644-3683; **Western:** 12233 W. Olympic, Los Angeles, CA 90064, (213) 826-5818; 582 Market St., Suite 1007, San Francisco, CA 94104,(415) 981-2595; 3031 Tisch Way, Suite 100, San Jose, CA 95128-2593, (408) 243-8838. **International:** 27 Paul St., London EC2A 4JU, England, (44-1) 628-7030, telex 914911; CPO Box 665, Tokyo, Japan, (81-3) 201-2335, fax 2135053.

DATAMATION (ISSN 0011-6963) Magazine is issued twice monthly on the 1st and 15th of every month by The Cahners Publishing Company, A Division of Reed Publishing USA, 275 Washington St., Newton, MA 02158-1630. William M. Platt, Chief Executive Officer; Terrence M. McDermott, President; Frank J. Sibley, Group Vice President; Jerry D. Neth, Vice President/Publishing Operations; J.J. Walsh, Financial Vice President/Magazine Division; Thomas J. Dellamaria, Vice President/Production and Manufacturing. Editorial and advertising offices, 249 W. 17th St., New York, NY 10011. Published at Woodstock, Il.. Annual subscription rates: U.S. and possessions: $60; Canada: $85; Japan, Australia, New Zealand: $155 air freight; Europe: $135 air freight, $250 air mail. All other nations: $135 surface, $250 air mail. Reduced rate for U.S. public and school libraries: $40. Single copy: $3 in U.S. Sole agent for subscriptions in Japan is Maruzen Co. Ltd., 3-10 Nihonbashi, 2-Chome, Chuo-ku, Tokyo 103, J; sole agent for all other foreign subscriptions is J.B. Tratsart Ltd., 154 A Greenford Rd., Harrow, Middlesex HA13QT, England. (01) 422-8295 or 422-2456. No subscription agency is authorized by us to solicit or take orders for subscriptions. Circulation records are maintained at 44 Cook Street, Denver, CO 80206. Phone (303) 388-4511. Second-class postage paid at Denver, CO 80206 and at additional mailing office. DATAMATION copyright 1988 by Reed Publishing USA; Saul Goldweitz, Chairman; Ronald G. Segel, President and Chief Executive Officer; Robert L. Krakoff, Executive Vice President. All rights reserved. DATAMATION is a registered trademark of Cahners Publishing Co. Reprints of articles are available; contact Frank Pruzina (312) 635-8800. Microfilm copies of DATAMATION may be obtained from University Microfilms, A Xerox Company, 300 N. Zeeb Rd., Ann Arbor, MI 48106. Printed by Graftek Press Inc. **All inquiries and requests for change of address should be accompanied by mailing label from latest issue of magazine.** Allow two months for change to be made. POSTMASTER: send address changes to DATAMATION, 44 Cook St., Denver, CO 80206.

ABP (ABC) BPA

Letters

More on Conversions

I have just finished reading David Stamps' article "Cutting Over A New System" (April 1, p. 68). I agree with his conclusions for the most part, but would like to add the following comments based upon my own experiences:

- Conversions are very difficult to "sell" to management because they are expensive, people intensive, and offer no immediate benefit to be seen. Some vendors are including conversions as a part of a "total solution."
- I believe that if a conversion lasts over six months, a phased approach must be developed. Mr. Stamps is correct in stating that long conversions eat up budgets and exhaust patience.
- Testing a conversion should be approached in a similar manner and with the same amount of importance as a development project.
- The most important step in a conversion is to determine what objective is to be attained. Don't just convert to be able to process on a different machine or different software. Try to take advantage of the features of the new technology you are going to use, be it machine or software.

Mr. Stamps commented on the use of automated tools but did not mention the use of offshore talent in conversions. This talent is available in parts of the world at a lower cost than using your own people. I know the talent is excellent because we use it. I also feel a fixed price bid should be given on a conversion project. If the project is extremely large, break it up into phases to get a fixed price for each phase.

I enjoyed Mr. Stamps' article and look forward to future articles.

JAMES ROTTER
President
DBMS Software Services
Houston

Smashing

I commend DATAMATION for the smashing feature story, "EDI Puts the Muscle in Commerce and Industry" by Willie Schatz (March 15, p. 56).

The in-depth research, the pros and cons, the enthusiastic reflection of the views, experiences, and prognostications of all parties interviewed, combine to make this one of the most expressive and informative articles published on EDI to date.

EDI is not an easy subject to cover because of its broad scope and the diversity of functional applications that it serves. Willie Schatz reached out and touched a wide spectrum of EDI users and service providers. He tells it like it is and leaves the reader much better informed about the realities and the future of EDI.

A salute to a writer and a publisher that produced an EDI story that needs to be told to every business executive in the national and international business communities. Business will be transacted without paper documents in the twenty-first century and DATAMATION has a mission to keep its readers informed of the transition from paper to the electronic world of EDI.

EDWARD A. GUILBERT
President
Guilbert Associates Inc.
Washington, D.C.

Go Berkeley!

I applaud your timely comments on the Unix-Posix standardization issue (see "ANSI, ISO Back Posix, Despite AT&T," April 1, p. 30); however, a description of this standards process without a mention of Berkeley 4.2 does a severe disservice in explaining the issue to your readers. While AT&T owns the Unix name, has published SVID (System V Interface Definition) and has fostered a large segment of the Unix marketplace, a significant fraction of the Unix marketplace depends on the Univ. of California, Berkeley version: Berkeley 4.2 or Unix 4.2bsd.

Berkeley Unix has taken hold in DOD applications, university environments, and on engineering workstations. It is this contention of Posix compatibility between Berkeley systems and System V systems that causes some of the conflicts on the standardization committees and provides some of the dynamics of why a Posix standard is somewhat hard to achieve.

MARVIN V. ZELKOWITZ
Associate Professor
Dept. of Computer Science
Univ. of Maryland
College Park, Md.

Correction

Digital Equipment Corp. and Eastman Kodak Co. did not enter a bid for Prudential Insurance Co. of America's optical storage-based document image processing system, although they participated in the initial bidder's conference (Look Ahead, May 1, p. 11). DEC adds that "if we had bid, it would have been with Kodak."

Open Systems: What Price Freedom?

Technology as well as market trends have ushered in a new era in the IS industry, an era whose essence is captured by the phrase "open systems." For many, it means freedom of choice to select the systems on which their businesses run, particularly in so-called mission critical applications. But this seemingly irresistible movement may also spell higher operating costs for users. The end result of the open systems trend may be a higher degree of freedom than ever before, but it won't come without a price.

BY RALPH EMMETT CARLYLE

The frantic pace of mergers and acquisitions in the global business marketplace, the competitive necessity of tightly integrating all business functions, and the proliferation of pcs and workstations on desktops, benchtops, and factory floors, has made multisystem communications a way of organizational life. This connectivity, once a technical objective of IS professionals, today is demanded by the people who run the organizations that IS pros support. To meet this demand, a host of new technology suppliers has challenged the established order of computer and software companies that derive their strength from proprietary solutions.

The challengers' battle cry is "FREEDOM." Their arsenals are so-called open systems—weaponry in the form of micros, portable software, and standard networking interfaces. Their impact on users could be far-reaching: open systems may allow users to automate heretofore unaddressed applications critical to organizational performance.

Open Systems Could Boost IS Investment

IS executives are expecting growth of 5% or so in traditional "back-office" applications, the domain of existing, closed architectures. But now a new wave of automation—of "mission critical" applications—is consuming most of their time and dollars, they explain.

Back-office systems for general accounting (accounts receivable/payable, payroll, etc.) are concerned almost exclusively with internal data, and are the bedrock on which IS organizations and data centers have been built. The new, so-called mission critical applications involve customers, suppliers, regulators, lawmakers, and others external to the organization. Such relationships demand open, multivendor solutions.

The upshot of open systems and the corresponding automation wave could be a dramatic increase in IS investments by U.S. user organizations. U.S. user organizations typically have spent between 1% and 3% of their annual revenues on IS technology, with information-intensive industries at the high end.

Their IS investments in five years could account for between 5% and 10% of total sales, chiefly because of open systems, reveal informal DATAMATION polls of some large organizations.

Unix and DOS Usage Projected To Soar

The growth of Unix and DOS (and projected growth of OS/2)—the operating systems that have become synonymous with open systems—is nearly as dramatic. By 1991, nearly half of the $54 billion of computer hardware sold in the U.S. will be machines that primarily use such operating systems, according to research firm International Data Corp., Framingham, Mass. Unix and DOS accounted for merely a third of U.S. hardware shipments in 1987, IDC estimates. OS/2, which began shipping late last year, wasn't yet a factor.

Riding this growth are relatively youthful suppliers such as Compaq Computer Corp., Microsoft, and Sun Microsystems. Their revenues, driven by sales of open systems products, have climbed as those of some traditional vendors of proprietary systems have stalled.

Numbers tell only part of the open systems story. These days, users speak volumes on the subject. "Back-office systems [mostly batch, mainframe-based] can be stabilized," says Mark Teflian, vp, technical planning & systems engineering for United Airlines' systems integration subsidiary, Covia Corp.,

Open systems may turn the IS industry topsy-turvy.

Illustration by John Jinks

Rosemont, Ill. "The applications are so routine that you can often use off-the-shelf software packages, or a remote service bureau such as IBM's."

But, he warns, building mission critical applications on IBM's proprietary technology is like offering it "a seat on United's board as chief information officer. If you want industry-wide innovation, not just IBM innovation, you've got to create a more open platform," he says.

IBM's LU 6.2 Looms Large

The best shot that United and other large IBM customers have at doing this is to create a single-tier organization based on Big Blue's peer-to-peer networking protocol, LU 6.2, although, as Teflian notes, "LU 6.2's specifications are still too complex for most systems programmers." After many millions of dollars' worth of effort in more than four years, Covia has written its own friendlier interfaces to its proprietary IBM operating systems from LU 6.2—what United MIS vp Don Karmazin calls its "Open Systems Manager"—and reveals that it is working with Microsoft to create interfaces to the more open Unix and OS/2 standards for new, mission critical applications.

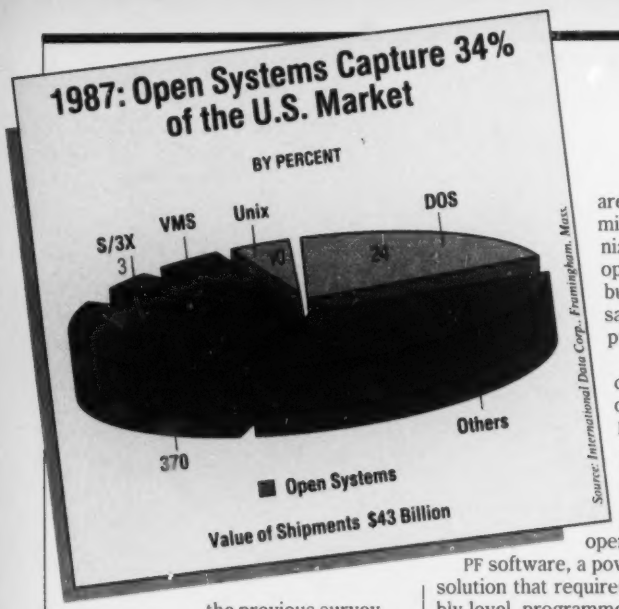
IBM is creating such interfaces—its Systems Application Architecture—for improved connectivity between its own products, "but not as quickly as we would like," says Karmazin.

American Airlines, a pioneer in the mission critical domain, warns that there are many hidden costs in the current SAA blueprint, due to IBM's insistence that big SNA host mainframes process not only data, but switch and route all transaction processing traffic in the network. Jim Jurasek, vp of systems engineering at the airline's Tulsa, Okla., MIS installation, claims that such SAA interfaces as CPI (Common Program Interface) and its subset CPIC (Common Program Interface for Communications) significantly increase the overhead of running a 309X mainframe under MVS.

American is replacing 20% of the dumb terminals in its network with PS/2s this year. "We expect our data communications costs to escalate significantly as a result, but it's difficult to predict such traffic volumes," Jurasek says.

He feels the answer is for the SAA blueprint to accommodate distributed transaction processing switches. "Unless we create such interfaces we'll go on seeing a pyramiding of our tp costs."

A recent DATAMATION/Cowen & Co. survey of more than 2,200 IBM and IBM plug-compatible sites in the U.S. showed that tp costs will be the fastest-growing budget item this year, up more than 8%. Other mission critical support elements, such as pcs and software packages, were next at 7.3% and 6.3%, respectively. Teleprocessing equipment growth had been second to pc growth on



Charts by Bob McAulay

the previous survey.

Such escalating costs can, of course, be the mother of invention. If IBM's customers can increase the amount of appropriate data flowing from pcs and workstations, and hence decrease the amount of raw data, they can reduce their operating costs.

American's "Transformational Device"

Says American's Jurasek, "We're developing an unusual transformational device, a sort of data resources processor, which can communicate with environments as disparate as TPF [transaction processing facility, the choice of airlines and banks for massive OLTP volume]; MVS [for batch]; VM [for interactive]; TSO [for timesharing]; and DEC's VAX cluster." The new device, when complete, will look at a message, disaggregate it, send it to the appropriate environment, and return the appropriate data to the applications program.

Fidelity Systems Co., the MIS arm of the Boston-based financial services firm, is exploring ways to park data in temporary stacks on a disk so that requests can be prioritized, the most critical handled first. "We are also interested in developing knowledge engines that turn raw data into information and dynamically manage network bandwidth," says former president Michael Simmons.

Although IBM has positioned SAA as part of the open systems movement, many customers are leery of such a characterization. "I don't think there's much doubt that SAA is IBM's last fling at account control," says Colin Harvey, assistant general manager for Lloyds Bank in London. "Take OS/2 Extended Edition," he says, referring to IBM's version of the PS/2 operating system and its 80% IBM proprietary content. "The bus is closed and many of the networking interfaces are closed." He admits the bank is agonizing over what operating system to buy for the thousands of PS/2s it will purchase.

"Even if we decide to stay with an open OS for the PS/2, our freedom will still only be relative," Simmons says, noting that the bank's main operation runs on IBM's PF software, a powerful but low-level solution that requires legions of assembly-level programmers for its maintenance. "TPF is undoubtedly the pragmatic, if not the conservative choice for the next decade." He adds that high-volume OLTP is the last bastion of proprietary technology: "Unix won't have the performance we need for years."

UNITED'S TEFLIAN: A more open platform is needed.

This, then, is the dilemma for all IBM customers and for IBM itself: freedom may be an illusion. Not everybody is that constrained though. Consider, for example, the former BUNCH mainframe companies or AT&T, the creator of Unix. Both were bruised in their battles with IBM, were relative "losers," and have much to gain from the adoption of open systems. Both have become friendly with the workstation king, Sun Microsystems, Mountain View, Calif., which has gained its market share largely at DEC's expense and has publicly criticized all proprietary systems. This intimacy has led to a Sun-nurtured alliance whose size and influence in the industry is already appreciable. One associate member, the $11 billion Unisys, is a case in point.

Peter Bakalor, Unisys vp, market strategy, says that the company has grown a $500 million Unix business from scratch in just two years. Even more to the point, Unisys has used Unix and other open standards, such as ISO's Open Systems Interconnection (OSI) model, and (ironically) IBM's de facto standard database language, SQL, to create a more effective merger of its two halves and offer its proprietary mainframe customers access to the open systems arena for new applications.

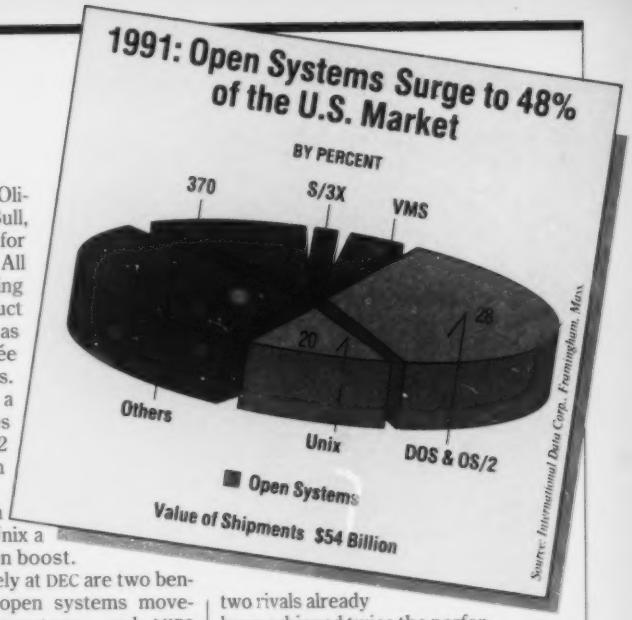
The Unix movement already has reached some phenomenal proportions. AT&T says there were 600,000 Unix installations worldwide in 1987 (many of them small, it should be added). Of those, 256,000 were created last year, a growth of 60% in one year.

Most Claim OSI Support

Most leading vendors now claim to support OSI, and they are shipping product at its various seven tiers. But here, as Jeffrey Alperin, vp at Aetna Life and Casualty, Hartford, Conn., points out, "It is difficult to measure the depth of vendor commitment, since no interface testing standards have yet been approved."

One key point that the above trends reveal about open systems is that they facilitate partnerships, and hence, scale. Through standard interfaces, the already feverish megamerger activity could accelerate to an even more frantic pace, with "megacorporations" occurring almost overnight. To counter such instant scale, both IBM and DEC may be forced into major acquisition programs, and, some experts believe, may even have to spin off major portions of their R&D organizations to preserve profit margins.

IBM has dropped the price of its main-



frame hardware by 25% a year throughout this decade, and says it will continue to do so for the foreseeable future. "Which means," says Earl Joseph, former Univac staff futurist and founder of Anticipatory Sciences, St. Paul, "that it will have to plow money back into hardware R&D that has come from other more profitable parts of its business—in essence, rob Peter to pay Paul. And I don't think it can continue to do this on projects entailing high risk."

Joseph predicts that IBM will create an R&D consortium with the best of the U.S. players in high-tech sectors (Cray, for example) to match strides with the government-funded Japanese. Fidelity Systems' Simmons notes that IBM also wants R&D alliances with its leading customers—especially in the area of network building: "That's one sure way for IBM to get a better focus on its R&D spending and be less wasteful."

It might be argued that the threats to IBM from the open systems movement are more speculative than real at present, but the same can't be said of DEC.

Every major European vendor, including Nixdorf, Olivetti, Siemens, Bull, and ICL, is gunning for the mini maker. All are now offering Unix-based product lines—usually as their primary entrée into new markets. Thus, we have a group of companies with well over $12 billion in European revenues—over twice DEC's size in Europe—giving Unix a major distribution boost.

Aimed squarely at DEC are two beneficiaries of the open systems movement—Sun Microsystems, and MIPS Computer, Sunnyvale, Calif. The two are locked in a price/performance race that Gordon Bell, former DEC vp of engineering and leader of its VAX design team, says is undermining the pricing structure of the whole industry. At some $5,000 per system MIPS—with software, peripherals and network gear thrown in—the two rivals already have achieved twice the performance level of today's leading pcs, and have moved several orders of magnitude beyond minis and mainframes with their Unix-based workstations.

Using their Reduced Instruction Set Computer (RISC) designs (ironically IBM was a pioneer in this technology), the two—recently joined by Motorola with

Searching for a Definition of "Openness"

A growing number of so-called open system, or standard, products have been developed over the years—C, MS/DOS, OS/2, Unix, Sun's Network File System, the 802.3 LAN-based cluster concept, the OSI model—but how does one define openness?

Roger Martin, manager, Software Engineering Group at the National Bureau of Standards (NBS), Gaithersburg, Md., asserts that rather than referring to these standards as "open," we should call them "less proprietary." He points out that despite their widespread adoption, Unix and OS/2, for example, are still controlled by their creators. This has caused a problem, not only for NBS, but for X/Open, a consortium of U.S. and European vendors hunting for truly portable standards. The NBS has been working with government agencies, systems integrators, and some big corporations to develop an Applications Portability Profile (APP), a sort of architectural blueprint of the most open interfaces and standards it can find across the various tiers. (X/Open's equivalent is called the Computer Applications Environment.) Having chosen its candidates, NBS will press for their standardization in open forums: that is, within the ruling standards bodies ISO, CCITT, and ANSI.

"This is the only way the likes of Unix can be the subject of industrywide innovation; the only way we can all benefit," says Martin. He doesn't believe such benefits occur when one vendor calls all the shots. About a year ago, the U.S. Air Force decided it needed 20,000 new systems. In the interest of portability it insisted on all bids being based on AT&T's Unix System V. Digital Equipment Corp. and Wang couldn't even bid a system and they complained vociferously, but to no avail. Other large government and nongovernment users also have specified Unix System V, which Martin, for one, thinks is a dangerous trend.

"It isn't right to insist that we should all use the same operating system, is it? Surely the proper place for a portability standard is at the applications interface," he argues.

The net result of all the turmoil in the Unix area has been the development in an open forum—at the IEEE—of a new Unix applications interface, Posix (for Portable Operating System Interface), which is expected to become an ISO standard shortly. Naturally, the new interface has been enthusiastically endorsed by NBS, which wants government agencies to make its use mandatory on upcoming bids.

It was the breakdown of homogeneous, proprietary systems that opened the door to the new standards, and, of course, to multivendor MIS shops. This collapse of the old order led to our most visible open standard: OSI, or Open Systems Interconnection. A seven-layer model from ISO provides a framework for applications that require communication among dissimilar equipment. "It's a symbol of our times," says Jeffery Alperin, assistant vp, corporate technology planning for Aetna Life & Casualty, Hartford, Conn. "Multivendor networking is a way of corporate life now and is critical to future growth."

Many vendors have jumped on the OSI bandwagon, and "OSI-compatible" has become as much of a battle cry as "open" itself. But how, MIS organizations are wondering, do you know which vendors are truly committed to openness? "The only way to find out," says Aetna's Alperin, "is to develop standard tests of vendor protocols." This idea was the inspiration for the creation of for the Corporation for Open Systems (COS), a coalition of U.S.-based computer vendors and customers devoted to the furtherance of open networking standards, initially via OSI and later through ISDN (Integrated Services Digital Network) as well.

The Goals of X/Open

It is has been five years since five disgruntled European vendors, each devastated by IBM in its home market and frustrated by bureaucratic standards bodies, decided to take their futures into their own hands. The group they formed, now known as X/Open Inc., Bracknell, U.K., has since grown into a formidable international organization of hardware suppliers, software firms, and major users.

X/Open now has 13 corporate members: DEC, AT&T, Unisys, NCR, Hewlett-Packard, Bull, Siemens, Nixdorf, Philips, Olivetti, Ericsson, ICL, and Sun. It has 13 software advisors, including Oracle, Informix, RTI, Unify, Sybase, and Cullinet, and 12 major user advisors (see list below).

Its goal is global support for a practical set of operating system guidelines that incorporate existing and de facto standards for hardware, software, and networking. Based on Unix System V, it is called the Common Application Environment (CAE), and it aspires to extensive applications portability and full connectivity. That open systems philosophy, the members believe, will become the IS creed in the decades ahead.

"The potential for open systems is certainly very great," agrees Chuck Gardner, technical associate for standards and protocols at Eastman Kodak Corp., Rochester, N.Y., and a member of X/Open's User Advisory Council. "If you think that around half of user spending is on maintaining systems, the potential is large. We expect to cut costs."

Gardner knows his topic well. Apart from his role at Kodak, he is also chairman of the U.S. MAP/TOP Steering committee, and chairman of the World Federation of MAP User Groups. His involvement with X/Open stems from Kodak's close tracking of the Unix and the open systems movement. "We hope to be able to influence the group, of course," Gardner says.

That's also why Gary Handler, vp for Market Decision Systems at Shearson Lehman Brothers in New York, is on the council. "It's really an extension of what I've been doing for years—pressuring vendors to get what I want," he says.

According to Geoff Morris, president and ceo of X/Open, the vendors in the group represent 55% of the world's mid-range systems business. The user council, meanwhile, has a combined IS purchasing budget measured in billions of dollars a year.

"What I'm looking for," says Handler, "is to cut down on the amount of work to get product to my users. X/Open may give me the ability to plug in applications in the most unobtrusive way possible. People like myself are already functioning as systems integrators. X/Open is going to be a tremendous benefit. These open standards will also take the computer hardware industry down to a commodity industry," he predicts, "and I don't think that is a negative effect."

In the British Airways offices in London's Heathrow Airport, advisory council member Bill Teather, head of the airline's Information Management Tactical Management department, expects the same. "To the extent that open standards produce commodity computing, that's what customers like us want. We don't expect it to happen in a year or so, but we must start to get our views about standards known now."

Of course, X/Open's work is far from over. Morris explains that while the first CAE conformance testing suites, developed by Unisoft, have now been delivered, the group hopes to set up links with 200 software companies by the end of the year to develop real products.

There's also the problem of encouraging Japanese involvement in the group. Unless this is successful, X/Open's positioning as an international body will be in jeopardy. Reaching a consensus may become more difficult with the broader membership, however.

Morris is also in close touch with other organizations, such as the Posix Committee at the IEEE, ANSI, and international standards bodies. These links may become a much more important part of the group's future.

"I think what we are going to see will be a blending of the open systems work of X/Open, Posix, and many other groups," predicts Shearson Lehman's Handler. "Out of that will come the standards we will all use."

X/Open User Advisory Council

Aetna Life and Casualty (U.S.)
British Airways (U.K.)
Council of European Communities (Belgium)
Daimler Benz (West Germany)
Treasury CCTA (U.K.)
Eastman Kodak (U.S.)
Lockheed (U.S.)
Michelin (France)
National Bureau of Standards (U.S.)
Shearson Lehman Bros. (U.S.)
Agency for Admin. Development (Sweden)
U.S. Dept. of the Treasury (U.S.)

BY PAUL TATE

its 88000 chip—are expected to reach a new frontier of $1,000 per system MIPS next year.

At the same time, Bell and other experts claim that Unix will have acquired the functional richness of DEC's VMS and IBM's VM operating systems—each a pillar of the proprietary world.

"Once this ground-breaking hardware and new Unix applications are coupled, you begin to see a total pricing collapse of our industry," Bell says. "Most new applications will migrate to the more open standard. They always have. And software companies will cut the price of these applications when they compete with the likes of DEC. It could be a bloodbath."

Bell makes the point that both users and developers should be aware of the downside to standards. "They provide both an interface and a target—and anyone can use them." Since 1984, by Bell's reckoning, the Japanese have been using evolved versions of IBM's 25-year-old 370 mainframe architecture to outperform Cray X-MP supercomputers on standard U.S. benchmark tests.

The most staggering thing about these IBM lookalikes is that they are derived from highly evolved 30-year-old integrated circuits and ECL circuitry and expressed in 30-year-old FORTRAN. Further, the vectorizing compilers are derived from the two-decade-old Illinois Illiac IV project.

Just how much of an artifact proprietary systems are or will become may be subject to debate, but one thing is for sure: the open systems movement is real and growing. Driven by technology as much as by supplier and user interest, this movement will have its costs, financial and otherwise, but the idea may be irresistible. ■

DATAMATION/PRICE WATERHOUSE SURVEY

Hardware Slows, Software Up

BY KIT GRINDLEY

The results of the Feb. 15 DATAMATION/Price Waterhouse IS Trend Survey indicated the spiraling recession that was curtailing many organizations' information technology budgets had come to an end. The decision to spend more freely on hardware and software has been confirmed by the most recent follow-up survey, based on the responses of over 2,250 information systems executives on the Price Waterhouse International Panel of Information System Executives in Australia, France, Japan, the U.K., and the U.S. Information technology budgets have been increased over a wide range, varying from 9% in the U.S. to 38% in Australia, where the recession had cut most deeply.

It is significant to note that while, overall, the budgets for information technology spending are up, the amount that is expected to be spent on computer hardware is declining in the U.S., France, and Australia, remains roughly the same in the U.K., and is increasing slightly—by 4%—in Japan.

The focus of most of the world's IS executives is now on the software that makes the hardware run effectively. This trend confirms what many industry observers have predicted about a maturing computer processing environment: reduced spending on computer hardware accompanied by increased spending on software acquisition, development, and implementation. This is a sign that MIS is able to provide more computing facilities to end users at a lower cost.

The survey indicates that spending on software is increasing over 1987 levels in all the countries studied, except for France and the U.S. In France, the total expecting to increase software purchases has dropped to 52% from the earlier survey's 64%. France's software acquisition, development, and implementation activities may be awaiting decentralization to lift the tight scrutiny on software expenditures.

Japan's increased reliance on IS is confirmed by Japanese IS executives, 72% of whom expect to spend more on software acquisition and development. By comparison, only 39% of their U.S. counterparts expect to increase the amount that they spend on software.

Over 50% of Japanese IS executives expect to provide salary increases under 5%, while over 90% of U.S. executives expect to limit salary increases to 10% or less. U.S. firms planning raises of over 10% are becoming very hard to find—down to 1% in the latest survey from 5% last quarter. France is the most tightfisted when it comes to salary increases:

JUNE 1, 1988

- **Spending on software is increasing over its 1987 level everywhere—except in France and the U.S.**
- **The world average of companies planning to increase hardware spending has dropped to 51% from 58%.**
- **More than 60% of U.S. firms now plan salary increases under 5% in the next year, but France is even more parsimonious.**
- **Integrating IS plans with corporate strategy is now one of the top three concerns for IS management in the U.K.**
- **IS management everywhere is trimming operations staff.**

70% of French IS executives surveyed have indicated they expect to limit salary increases to under 5%.

There is a considerable difference between the countries surveyed when it comes to the controversial issue of decentralization, the swing to more user power and more end-user control of IS resources. Australian installations, where decentralization is up by 14%, show an increasing tendency to favor "user power." In the U.S., however, where decentralization is down by 7%, companies seem to be drawing in the reins.

IS executives from all over the world—except in Japan—confess that developing and implementing applications processing systems on time, within budget, and in accord with either vaguely stated or changing user requirements is still a nagging management problem. Despite new methodologies for systems development that rely on CASE (computer assisted software engineering) tools, the low level of their current utilization (about 5% of U.S. installations and less than 1% in other countries) means the industry has yet to solve this major problem. The systems development, implementation, timing, and cost issue still ranks as the number one problem after 10 years of Price Waterhouse computer opinion surveys.

Worldwide, computer applications are migrating from transaction processing activities in support of business processes to decision support activities in support of necessary business function tactics. As applications move from backroom administration to frontline strategy, integrating information systems with corporate plans—complementing corporate business plans with a supporting strategic information systems plan—has for the first time entered the top three on the list of the most pressing information technology problems.

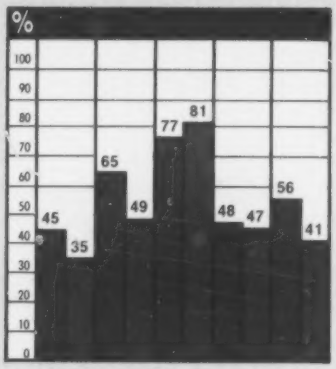
In Japan, meanwhile, IS managers have other worries. Although meeting project deadlines is not even among the top three concerns in Japan, managers are fretful about maintaining their existing programs and controlling runaway users—another result of the policy that keeps Japanese programmers circulating through the corporation. This problem appears likely to worsen in the future. Since more Japanese firms intend to increase hardware and software spending than do their counterparts in other countries, they will soon have even more systems to maintain and to worry about. Unless Japan's staffing and systems development policies change, this issue could become a serious brake on the nation's plans to become the world's leading user of IS. ■

Kit Grindley is a management consultant for Price Waterhouse and a professor of systems automation at the London School of Economics. The International Trend Survey is conducted in collaboration with The Australian *in Sydney,* Computing *in London,* Le Monde Informatique *in Paris, and* Nikkei Computer *in Tokyo.*

Trends for the Next 12 Months

HARDWARE SPENDING

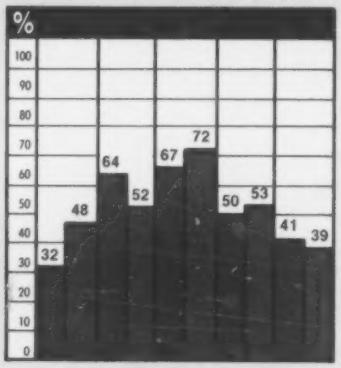
■ Last Quarter
■ This Quarter



Only in Japan are hardware spending increases up over last survey. The more mature IS industries in the other countries account for their slower pace.

SOFTWARE SPENDING

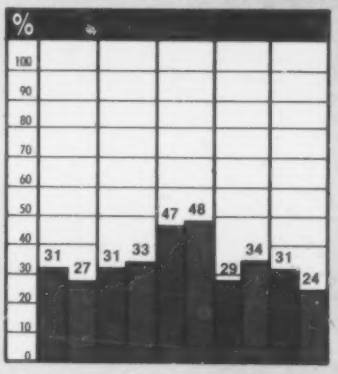
■ Last Quarter
■ This Quarter



Australian software spending is now closer to the norm of France, the U.K. and the U.S. Japan's drive to computerize is evidenced by its nearly 20% lead over its closest rival.

DEVELOPMENT STAFF

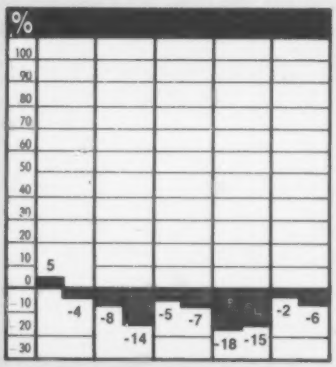
■ Last Quarter
■ This Quarter



Not much change exhibited in most IS execs' plans for development staff. In the U.S., only a quarter of the surveyed shops are increasing development staffs.

OPERATIONS STAFF

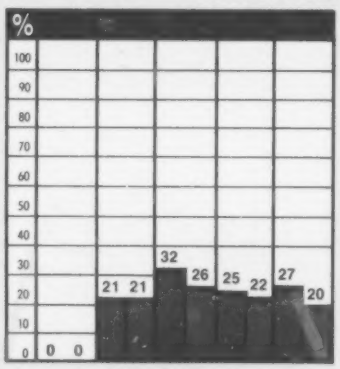
■ Last Quarter
■ This Quarter



Operations staffs are feeling the pinch worldwide. Australian IS execs have scaled back from the increases they planned in the earlier survey.

TELECOM STAFF

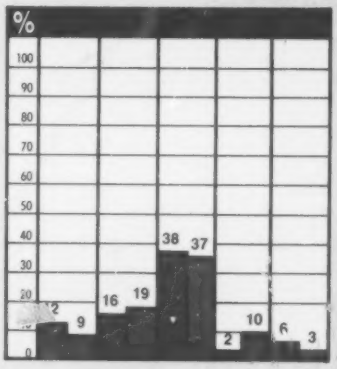
■ Last Quarter
■ This Quarter



Telecom pros can expect a healthy job market everywhere but in Australia. But except for France, increases in telecom hiring are smaller than in the last survey.

CONTRACT STAFF

■ Last Quarter
■ This Quarter

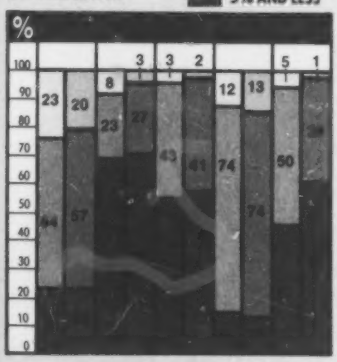


The U.K. is the scene of more use of outside IS pros. But Japan is still the champion user of outside expertise.

SALARY MOVES

■ Last Quarter
■ This Quarter

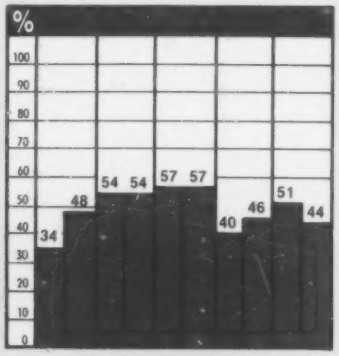
10% AND OVER
5% - 10%
5% AND LESS



"Expect lower raises," is the message delivered by almost all the respondents. Still 20% of IS workers in Australia can look for more than 10% raises this year.

DECENTRALIZATION TREND

■ Last Quarter
■ This Quarter



There is a lull in decentralization moves in the U.S., France and Japan are leveling off, but in Australia and the U.K., the urge to decentralize is moving up.

Top 3 User Issues Around the World

(actual mentions, by country, as a percentage)

	AUS	FRA	JAP	UK	US
Deadlines	36	52	—	34	49
Evaluating Proposals	21	—	—	—	—
Predicting Info Technology	19	54	—	—	46
Intergrating Communications/DP	—	38	—	—	46
Program Maintenance	—	—	58	—	—
Go-alone Users	—	—	50	—	—
Integ. IS With Corp. Strategy	—	—	—	27	—
Recruitment	—	—	44	27	—

Except in Japan, meeting project deadlines remains the most pressing issue. A newcomer to the list is "integrating IS with corporate strategy." In Japan, "recruitment" has entered the top three worries.

Source: DATAMATION/Price Waterhouse